

WHAT IS CLAIMED IS:

1           1.     An angle attachment for a rotary power tool comprising:  
2                     a first assembly including a first shaft and a first gear, the  
3     first shaft having a central longitudinal axis;  
4                     a second assembly including a second shaft and a second  
5     gear, wherein the second gear engages the first gear and the second shaft  
6     has a central longitudinal axis, wherein the central longitudinal axis of the  
7     second shaft is not collinear or parallel to the central longitudinal axis of  
8     the first shaft; and  
9                     a member configured for removable coupling to a motor shaft  
10    of a rotary power tool and for removable coupling with the first assembly;  
11                     wherein at least a portion of the member is configured for  
12    insertion into a component of the first assembly.

1           2.     The angle attachment of claim 1, wherein the first assembly  
2     is retained within the angle attachment such that the angle attachment  
3     may be coupled to the rotary power tool without removal of the first  
4     assembly from the angle attachment.

1           3.     The angle attachment of claim 1, further comprising a  
2     polygonal aperture provided in the component of the first assembly for  
3     receiving at least a portion of the member.

1           4.     The angle attachment of claim 3, wherein the component  
2     comprises a connector coupled to the first shaft.

1           5.     The angle attachment of claim 3, wherein the component  
2     comprises the first shaft and the aperture is provided in an end of the first  
3     shaft.

1           6.     The angle attachment of claim 1, wherein the member  
2 includes a central longitudinal axis and a head portion having a plurality of  
3 surfaces.

1           7.     The angle attachment of claim 6, wherein the head portion  
2 has a polygonal cross-sectional shape transverse to the central  
3 longitudinal axis of the member.

1           8.     The angle attachment of claim 7, wherein at least one of the  
2 plurality of surfaces is convex with respect to the central longitudinal axis  
3 of the member.

1           9.     The angle attachment of claim 8, wherein a plurality of the  
2 surfaces are convex with respect to the central longitudinal axis of the  
3 member.

1           10.    The angle attachment of claim 8, wherein the head portion  
2 includes six surfaces and the head portion has a generally hexagonal  
3 cross-sectional shape transverse to the central longitudinal axis of the  
4 member.

1           11.    The angle attachment of claim 6, wherein the head portion  
2 includes four relatively planar surfaces such that the cross-section of the  
3 head portion transverse to the longitudinal axis of the member is  
4 substantially square.

1           12.    The angle attachment of claim 11, further comprising at least  
2 one of a curved portion and a chamfered portion provided intermediate  
3 each of the four planar surfaces.

1           13.    The angle attachment of claim 1, wherein the member has  
2    an aperture formed therein for engaging a drive shaft of an attachment for  
3    a power tool.

1           14.    The angle attachment of claim 13, wherein the aperture is  
2    configured for engaging a drive shaft of a flexible shaft cutting tool  
3    attachment for a power tool.

1           15.    The angle attachment of claim 1, wherein at least one of the  
2    first gear and the second gear is a pinion gear and the other of the first  
3    gear and the second gear is a crown gear.

1           16.    The angle attachment of claim 1, wherein at least one of the  
2    first gear and the second gear is a bevel gear.

1           17.    An attachment for a rotary power tool comprising:  
2                   a first assembly comprising a first gear coupled to a first  
3    shaft; and  
4                   a second assembly comprising a second gear coupled to a  
5    second shaft, the second gear intermeshing with the first gear;  
6                   wherein a component of the first assembly includes an  
7    aperture for receiving therein at least a portion of a connector configured  
8    for removable coupling between a motor shaft of a rotary power tool and  
9    the component;  
10                  wherein the attachment is configured to translate rotation of  
11   the first shaft to rotation of the second shaft, the first and second shafts  
12   each having axes of rotation and oriented such that the axis of rotation of  
13   the first shaft is neither parallel nor collinear with the axis of rotation of  
14   the second shaft.

1           18. The attachment of claim 17, wherein the first assembly is  
2 retained within the attachment such that the angle attachment may be  
3 coupled to the rotary power tool without removal of the first assembly  
4 from the angle attachment.

1           19. The attachment of claim 17, wherein the component  
2 including an aperture comprises a connector coupled to the first shaft.

1           20. The attachment of claim 17, wherein the component  
2 including an aperture is the first shaft and the aperture is provided in an  
3 end portion of the first shaft.

1           21. The attachment of claim 17, wherein the connector includes  
2 a central longitudinal axis and a head portion having a plurality of  
3 surfaces.

1           22. The attachment of claim 21, wherein the head portion has a  
2 polygonal cross-sectional shape transverse to the central longitudinal axis  
3 of the member.

1           23. The attachment of claim 22, wherein a plurality of the  
2 plurality of surfaces are convex with respect to the central longitudinal  
3 axis of the connector.

1           24. The attachment of claim 22, wherein the head portion  
2 includes four relatively planar surfaces such that the cross-section of the  
3 head portion transverse to the longitudinal axis of the member is  
4 substantially square.

1           25. An angle attachment for a rotary power tool comprising:  
2                   a first assembly comprising a first gear provided on a first  
3 shaft;

4                   a second assembly comprising a second gear intermeshing  
5 with the first gear and provided on a second shaft, the first shaft and  
6 second shaft arranged such that they are not parallel or collinear with  
7 each other; and

8                   a member for removable coupling to the first assembly and  
9 to a drive shaft of a rotary power tool;

10                  wherein the first shaft includes an aperture for receiving  
11 therein a portion of the member;

12                  whereby rotation of the drive shaft of the rotary power tool  
13 may be communicated to the first assembly and to the second assembly  
14 by coupling the member to the drive shaft and to the first assembly.

1           26.   The attachment of claim 25, wherein the first assembly is  
2 retained within the angle attachment such that the angle attachment may  
3 be coupled to the rotary power tool without removal of the first assembly  
4 from the angle attachment.

1           27.   The angle attachment of claim 25, wherein the aperture is  
2 provided in an end portion of the first shaft.

1           28.   The angle attachment of claim 25, wherein the connector  
2 includes a central longitudinal axis and a head portion having a plurality of  
3 surfaces.

1           29.   The angle attachment of claim 28, wherein the head portion  
2 has a polygonal cross-sectional shape transverse to the central  
3 longitudinal axis of the member.

1           30.   The angle attachment of claim 29, wherein at least one of  
2 the plurality of surfaces are convex with respect to the central  
3 longitudinal axis of the connector.

1           31. The angle attachment of claim 29, wherein the head portion  
2 includes four relatively planar surfaces such that the cross-section of the  
3 head portion transverse to the longitudinal axis of the member is  
4 substantially square.

1           32. A connector for coupling a rotary power tool to an  
2 attachment for the rotary power tool, the connector comprising:  
3               a shaft having a central longitudinal axis, the shaft  
4 configured for coupling to a drive shaft of a rotary power tool; and  
5               a head portion having a plurality of surfaces, at least a  
6 portion the head portion having a generally polygonal cross-section  
7 transverse to the central longitudinal axis, at least one of the plurality of  
8 surfaces being convex with respect to the central longitudinal axis in the  
9 direction of the central longitudinal axis;  
10               wherein the head portion is configured for engaging a  
11 polygonal aperture provided in a component coupled to a rotary member  
12 of the attachment;  
13               whereby rotation of the drive shaft of the rotary power tool  
14 may be transmitted to the rotary member of the attachment utilizing the  
15 connector.

1           33. The connector of claim 32, wherein the portion of the head  
2 portion has a generally hexagonal cross-section transverse to the central  
3 longitudinal axis.

1           34. The connector of claim 32, wherein a plurality of the  
2 surfaces of the head portion are convex with respect to the central  
3 longitudinal axis in the direction of the central longitudinal axis.

1           35.    The connector of claim 32, wherein the connector includes  
2    an aperture formed therethrough for engaging a drive shaft of an  
3    attachment for a rotary power tool.

1           36.    The connector of claim 35, wherein the aperture provided in  
2    the connector has a generally polygonal shape.

1           37.    The connector of claim 36, wherein the aperture includes a  
2    plurality of sides and at least one of the plurality of sides includes a  
3    cutout for engaging a feature provided on the drive shaft.